

WHAT IS CLAIMED IS:

1. A computer system comprising at least two processes P1, P2,...Pi,...PN connected by a network wherein, each process being executed by a piece of hardware equipped with an operating system, a process  
5 comprises at least:

- a library software layer by which this operating system can access the programs for the activation of the communications protocols associated with the inputs/outputs;

- an intermediate layer comprising an inter-process  
10 communications process associated with a communications channel;

- a multiplexer encapsulated in the library multiplexing the communications channel of a process Pi with the communications channels of the other processes P1, P2,...PN, the exchanges being made in the form of data flows, the communications channel between two processes Pi, Pk  
15 being activated by the multiplexers of the two processes, upon a request by one of them.

2. A system according to claim 1, wherein the library is interposed between an applications software layer and the operating system.

3. A system according to one of the above claims, wherein the  
20 transmission channel carries out the one-way transfer of data between two processes.

4. A system according to one of the above claims, wherein the inter-process communications service is activated by the multiplexer by the interception of calls pertaining to inputs/outputs according to a protocol made  
25 up of requests and responses, this protocol being defined at the level of the multiplexer in a table indicating the type of data, the exchanges being made in the form of data flows.

5. A system according to claim 4 wherein, in addition to the inter-process communications service, other services activated by the multiplexer  
30 are associated with the process, the services being activated according to a protocol consisting of requests and responses.

6. A system according to any of the claims 4 or 5, wherein the table indicates the type of data, namely whether it is a request or a response, the associated service as well as the sizing attributes for the data processing.

7. A system according to any of the claims 5 or 6 wherein, a service being the master-slave redundancy, the first instance of the slave being a master and the following instances being slaves, when a process  $P_i$  sends out a request, this request is processed by all the other processes  $P_1$ ,  $P_2$ , ... $P_N$ , the multiplexer of these processes filtering the responses of the slaves in the event of the loss of a master, a slave being promoted to master in its turn.

8. A system according to any of the claims 5 to 7 wherein, in a selective concurrent mode of access to a process, to enable the distribution of the processing load among several instances of the process, the multiplexer of this process makes a selection, at each request, of the instance that carries out the processing.

9. A system according to any of the claims 5 to 8 wherein, in a mode of non selective concurrent access to a process, at least two instances of a process make the same requests, their responses being returned to the client process which decides on the validity of the responses.

10. A system according to any of the claims 5 to 9, wherein a multiplexer collects supervision data at the two boundaries that it faces, the interface with the process  $P_1$ ,  $P_2$ , ... $P_N$  and the interface with the transport medium for all these data, the process recording the number of measurements, the minimum, maximum and mean values, for each of these values, thresholds being configured, the crossing of these thresholds being used to activate an alarm or to carry out another action.

11. A system according to claim 10 wherein, for the interface with the process, the multiplexer collects the data pertaining to the size of the requests or responses, the frequency and the processing time taken by the process, and for the interface with the medium, it collects the data pertaining to the latency time and to the quality of transmission.